MESSAGING SYSTEM

BACKGROUND OF THE INVENTION

This invention relates to a messaging system, in particular a messaging system for use in the DECT (Digital European Cordless Telecommunications) system and other communications systems such as WCPE (Wireless Customer Premises Equipment) and PHS (Personal Handyphone System). The system may be used to provide a multipurpose messaging service that can be used for access to alternate data/messaging services with a common air interface structure accomplished with a general protocol layer defined on the top of the DECT protocol layers.

One implementation of a DECT system will now be described.

The Digital European Cordless Telecommunications (DECT) is a standard provided for cordless communications for both voice and data traffic. Reference may be had to the ETSI documents defining the system, which are incorporated herein by reference. A DECT system includes at least one portable part (PP) and at least one fixed part (FP). The PP contains all elements between the user and the air interface whereas the FP contains all elements between a local network and air interface. Thus no fixed infrastructure has been defined. The connection to the networks is made through interworking unit (IWU), functions of which are defined in the DECT profiles.

The DECT protocol layer structure is illustrated in the FIG. 1. The following descriptions of the layers are based on the common interface standard ETS 300 175-1 to 9. Radio Equipment and Systems (RES); Digital European Cordless Telecommunications (DECT) Common interface Part 1-9. European Telecommunications Standards Institute 1992 thus the features described here form a library of services for use by different profiles. DECT provides on the physical layer, in the frequency band of 1880–1900 MHz, 10 carriers each of which are carrying 24 TDMA slots. The slots can be used for either bi-directional (12 slots for both directions) or unidirectional traffic (maximum of 23 slots for one direction). The gross bit rate is 1152 kbit/s. A timeslot is divided into control/signalling (4.8 kbit/s net rate) and traffic fields (32 kbit/s net rate).

The medium access layer (MAC) can provide broadcast, connectionless and connection oriented service. The connection oriented service can be non-protected or protected. The protected service provides a possibility for modulo 2 retransmisson.

The data link control layer is divided into C- (signalling and low rate user traffic) and U-planes (user traffic). The U-plane can provide the following services for the upper layer application: LU1 transparent unprotected data (for voice), LU2 frame relay (data), LU3 frame switching (LU2 with LAP protocol for data), LU4 forward error correction (data), LU5 and LU6 rate adaptation for V.110 traffic. In addition LU7 is defined in the DECT/ISDN interworking profile to provide services for ISDN traffic.

The network layer on the C-plane contains the following services: Call Control (CC) used for call establishment and maintenance, mobility management (MM), call independent supplementary service (CISS) used for supplementary services, connection oriented message service (COMS) is an acknowledgment service used for transportation of limited amount of user data and Connectionless message service (CLMS) used for broadcast or point to point connectionless traffic. Call related supplementary services (CRSS) are

related to a CC call and it provides a specific keypad protocol for the service management. The U-plane does not have a network layer.

BRIEF SUMMARY OF THE INVENTION

According to a first aspect of the present invention there is provided a messaging system for communicating a message between a first communications unit having a first messaging entity and a second communications unit having a second messaging entity, each messaging entity comprising: a messaging call control means for establishing a messaging communications link with the other messaging entity; and a messaging means for, once the messaging communications link has been established, exchanging messaging information with the said other messaging entity.

Preferably, the messaging entity constitutes a virtual layer between the application layer and the network layer of the communication protocol.

The messaging information suitably includes header data and user data associated with the message. The header data and the user data suitably include data defining a message sequence number of the message. The header data and the user data are preferably carried by different communications links. Most preferably one link operates through a C-plane and the other link operates through a U-plane of a communication protocol.

The messaging system suitably operates according to the DECT, WCPE or PHS protocols. One of the communications units may be a portable part and the other is a fixed part. Alternatively, one of the units may be an intermediate server unit. One of the communications units may be provided with an interworking unit for performing protocol conversion.

According to the present invention from a second aspect there is provided a messaging method for communicating a message between a first communications unit and a second communications unit, the first communications unit having an application layer, a messaging entity and a network layer, the method comprising the steps of: transmitting a signal from the application layer to the network layer as a means of establishing a call; exchanging messaging information between the application layer and the network layer by way of the messaging entity to communicate the message; and transmitting a signal from the application layer to the network layer as a means of disconnecting the call.

According to the present invention from a third aspect there is provided a messaging method for communicating a message between a first communications unit and a second communications unit, the first communications unit having an application layer, a messaging entity and a network layer, the method comprising the steps of: transmitting a signal from the messaging entity to the network layer as a means of establishing a call; exchanging messaging information between the application layer and the network layer by way of the messaging entity to communicate the message; and transmitting a signal from the messaging entity to the network layer as a means of disconnecting the call.

In the messaging system/method commands can preferably be sent between messaging entities of each communications unit. The commands preferably include MMS SEND, MMS RETREIVE, MMS-RETREIVE-RPY, MMS COMMAND, MMS-COMMAND-RPY and MMS STATUS.

A messaging entity can preferably request a reply from the other messaging entity or an end entity. The said header data is preferably conveyed in one or more DECT/WCPE/